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CLAIMS:

What is claimed is:

- 5 1. A data processing system with programmable
addressing, comprising:
multifunctional input/output devices in a logical
partition environment;
control bits located in a memory, wherein the
10 control bits allocate the multifunctional input/output
devices into memory;
an address bus leading the control bits to locations
for the multifunctional input/output devices; and
a programmable address control, wherein the
15 programmable address control relocates individual
functions.
2. A method of programmable addressing comprising the
steps of:
20 relocating functions within a multifunctional chip
to be distributed across multiple logical partitions; and
maintaining security over the distribution
mechanism.
- 25 3. A method for protecting control bits in a data
processing system, the method comprising:
choosing an address bit from a plurality of address
bits that store addresses to data processing system
functions; and
30 inverting the address bit such that any individual
operating system instance in a set of operating system
instances is unable to access the stored address; wherein

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the set of operating system instances are safeguarded from being corrupted and the other instances of the operating system are safeguarded from being affected.

- 5 4. A method for reducing changes in a control area of a multifunctional device, the method comprising:

 moving the control area of a multifunctional device to an area secure from access by other computer programs; and

- 10 remapping the internal functions of the multifunctional devices to normal address ranges expected by the computer program in respective logical partition.

5. The method as recited in claim 4, further comprising:

- 15 remapping the internal functions of the multifunctional device by inserting an inverter on the multifunctional device's address bus.

6. The method as recited in claim 5, further comprising:

- 20 remapping the multifunctional device's internal functions by inserting on the multifunctional device's address bus a programmable inverter such that the inverter can be changed based on any operating environment and frequency of initialization.

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7. A computer program product in a computer readable media for use in a data processing system for programmable addressing, the computer program product comprising:

- 30 first instructions for relocating functions within a multifunctional chip to be distributed across multiple logical partitions; and

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second instructions for maintaining security over the distribution mechanism.

8. A computer program product in a computer readable
5 media for use in a data processing system for protecting control bits in a data processing system, the computer program product comprising:

first instructions for choosing an address bit from a plurality of address bits that store addresses to data
10 processing system functions; and

second instructions for inverting the address bit such that any individual operating system instance in a set of operating system instances is unable to access the stored address; wherein the set of operating system
15 instances are safeguarded from being corrupted and the other instances of the operating system are safeguarded from being affected.

9. A computer program product in a computer readable
20 media for use in a data processing system for reducing changes in a control area of a multifunctional device, the computer program product comprising:

first instructions for moving the control area of a multifunctional device to an area secure from access by
25 other computer programs; and

second instructions for remapping the internal functions of the multifunctional devices to normal address ranges expected by the computer program in respective logical partition.

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10. The computer program product as recited in claim 9, further comprising:

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third instructions for remapping the internal functions of the multifunctional device by inserting an inverter on the multifunctional device's address bus.

- 5 11. The computer program product as recited in claim 10, further comprising:

fourth instructions for remapping the multifunctional device's internal functions by inserting on the multifunctional device's address bus a
10 programmable inverter such that the inverter can be changed based on any operating environment and frequency of initialization.

12. A system for programmable addressing, the system
15 comprising:

first means for relocating functions within a multifunctional chip to be distributed across multiple logical partitions; and

- second means for maintaining security over the
20 distribution mechanism.

13. A system for protecting control bits in a data processing system, the system comprising:

first means for choosing an address bit from a
25 plurality of address bits that store addresses to data processing system functions; and

- second means for inverting the address bit such that any individual operating system instance in a set of operating system instances is unable to access the stored
30 address; wherein the set of operating system instances are safeguarded from being corrupted and the other instances of the operating system are safeguarded from

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being affected.

14. A system for reducing changes in a control area of a multifunctional device, the system comprising:

- 5 first means for moving the control area of a multifunctional device to an area secure from access by other computer programs; and
- second means for remapping the internal functions of the multifunctional devices to normal address ranges
- 10 expected by the computer program in respective logical partition.

15. The system as recited in claim 14, further comprising:

- 15 third means for remapping the internal functions of the multifunctional device by inserting an inverter on the multifunctional device's address bus.

16. The system as recited in claim 15, further comprising:

- 20 fourth means for remapping the multifunctional device's internal functions by inserting on the multifunctional device's address bus a programmable inverter such that the inverter can be changed based on
- 25 any operating environment and frequency of initialization.